



[4910-13-P]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2013-0766; Directorate Identifier 2013-NE-26-AD]

RIN 2120-AA64

Airworthiness Directives; Pratt & Whitney Canada Corp. Turboprop Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Supplemental notice of proposed rulemaking (NPRM); request for comments.

SUMMARY: We are revising an earlier proposed airworthiness directive (AD) for all Pratt & Whitney Canada Corp. (P&WC) PT6A-114 and PT6A-114A turboprop engines. The NPRM proposed to require initial and repetitive borescope inspections (BSIs) of compressor turbine (CT) blades, and the removal from service of blades that fail inspection. The NPRM was prompted by several incidents of CT blade failure, causing power loss and in-flight shutdown of the engine resulting in four fatalities.

This action revises the NPRM by adding a mandatory terminating action. We are proposing this supplemental NPRM (SNPRM) to prevent failure of CT blades, which could lead to damage to the engine and damage to the airplane. Since these actions impose an additional burden over that proposed in the NPRM, we are reopening the comment period to allow the public the chance to comment on this proposed change.

DATES: We must receive comments on this SNPRM by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- Federal eRulemaking Portal: Go to <http://www.regulations.gov>. Follow the instructions for submitting comments.

- Fax: 202-493-2251.
- Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590.
- Hand Delivery: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For service information identified in this proposed AD, contact Pratt & Whitney Canada Corp., 1000 Marie-Victorin, Longueuil, Quebec, Canada, J4G 1A1; phone: 800-268-8000; fax: 450-647-2888; Internet: www.pwc.ca. You may view this service information at the FAA, Engine & Propeller Directorate, 12 New England Executive Park, Burlington, MA. For information on the availability of this material at the FAA, call 781-238-7125.

Examining the AD Docket

You may examine the AD docket on the Internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2013-0766; or in person at the Docket Management Facility between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this proposed AD, the Transport Canada Civil Aviation (TCCA) AD, the regulatory evaluation, any comments received, and other information. The address for the Docket Office (phone: 800-647-5527) is in the ADDRESSES section. Comments will be available in the AD docket shortly after receipt.

FOR FURTHER INFORMATION CONTACT: Robert Morlath, Aerospace Engineer, Engine Certification Office, FAA, Engine & Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803; phone: 781-238-7154; fax: 781-238-7199; email: robert.c.morlath@faa.gov.

SUPPLEMENTARY INFORMATION:

Comments Invited

We invite you to send any written relevant data, views, or arguments about this proposed AD. Send your comments to an address listed under the ADDRESSES section. Include “Docket No. FAA-2013-0766; Directorate Identifier 2013-NE-26-AD” at the beginning of your comments. We specifically invite comments on the overall regulatory, economic, environmental, and energy aspects of this proposed AD. We will consider all comments received by the closing date and may amend this proposed AD because of those comments.

We will post all comments we receive, without change, to <http://www.regulations.gov>, including any personal information you provide. We will also post a report summarizing each substantive verbal contact we receive about this proposed AD.

Discussion

We issued an NPRM to amend 14 CFR part 39 by adding an AD that would apply to all P&WC PT6A-114 and PT6A-114A turboprop engines. The NPRM published in the Federal Register on October 29, 2013 (78 FR 64421). The NPRM proposed to require initial and repetitive BSIs of CT blades, and the removal from service of blades that fail inspection.

Actions Since Previous NPRM was Issued

Since we issued the NPRM, we received additional information as a result of comment responses and as part of an ongoing investigation.

Comments

We gave the public the opportunity to participate in developing this AD. We considered the comments received.

Agreement with the Proposed AD

The National Transportation Safety Board (NTSB) and Hawkins Aero agreed with the need for the AD action.

Request to Harmonize

TCCA requested that the Compliance section of this AD be revised to mandate that operators replace pre-P&WC Service Bulletin (SB) No. PT6A-72-1669 CT blades with single crystal CT blades within the next 36 months. TCCA's AD CF 2013-21R1 mandates that operators replace all CT blades with new part number (P/N) single crystal CT blades within 36 months after the effective date of the AD to address the unsafe condition of CT blade failures due to creep. The NPRM does not mandate that new P/N single crystal CT blades be installed within a particular period of time. TCCA requested that we revise the FAA AD to better address the unsafe condition.

We agree. We changed the Compliance paragraph to require that all CT blades be replaced with single crystal CT blades within 36 months after the effective date of this AD.

Request to Remove Mandatory Upgrade

Hawkins Aero and an individual commenter requested that the AD not require operators to upgrade to single crystal CT blades. Hawkins Aero stated that based on knowledge of previously conducted metallurgical examinations, certain operators experience higher levels of CT blade deterioration based on operating practices. The other commenter stated that low utilization operators may face a heavy economic burden in order to upgrade to the new single crystal CT blades.

We partially agree. We disagree with allowing certain operators to not upgrade to single crystal CT blades because CT blade failure due to creep is a significant problem for this type design, and the unsafe condition identified in this AD must be corrected. We did not change the requirement to replace the CT blades. We agree that mandating the

installation of single crystal CT blades will impose a significant economic burden on low utilization operators. As such, we are re-opening the comment period for this AD to allow the public the chance to comment on the proposed changes. The additional economic costs for low utilization operators are included in the Costs of Compliance.

Request to Change Borescope Inspection Requirements

The same individual commenter requested a review and modification of the compliance time for the initial and repetitive BSIs for low-utilization operators. The commenter justified this request by stating that, “Since the vast majority of the 114A fleet is utilized in the relatively high utilization environment of commercial operation, based on an assumption of 500 hours annual utilization, the repetitive BSIs would be done on an annual basis”.

We do not agree. The creep condition addressed by this proposed AD is related to time in operation at high temperature and high power settings, not calendar time. We did not change the compliance time.

Request to Change Definitions Paragraph

Hawkins Aero requested that we revise the Definitions paragraph to include specific original equipment manufacturer and parts manufacturer approval (PMA) P/Ns. The justification for this request is that the proposed AD does not specifically identify pre- and post-SB No. PT6A-72-1669 P/Ns and does not list PMA P/Ns.

We partially agree. We agree that P/N identification is necessary. We identified what P/Ns can be installed during the compliance period and what P/Ns must be installed prior to the end of the 36-month compliance period. We disagree with listing all potential original equipment manufacturer and PMA P/Ns. We deleted the Definitions paragraph and expanded the Compliance paragraph to identify eligible P/Ns.

Request to Include Two-Blade Metallurgical Examination

TCCA and Hawkins Aero requested that the Compliance paragraph be changed to require operators to perform a two-blade metallurgical examination at each hot section interval (HSI). The reason for this request is that the P&WC maintenance manual recommends, and the TCCA AD currently requires, that operators perform a metallurgical evaluation of two CT blades at each HSI in lieu of replacing the entire set. Based on the deterioration of the micro-structure observed in the two blade sample, a determination is made as to whether the remaining CT blades can continue in service. TCCA also requested that we revise the Applicability paragraph of the AD to clearly state that the CT blades be replaced or undergo metallurgical evaluation, repetitively, at each HSI. TCCA stated that the NPRM did not clearly state whether the evaluation was a one-time or a repetitive requirement and that without requiring the evaluation be made at each HSI our AD does not meet the basic intent of their AD, which was to detect the impending failure of the CT blades as a result of creep on all engines moving forward.

We partially agree. We agree with allowing operators to perform the metallurgical examination instead of replacing the entire set of CT blades at each HSI because the metallurgical evaluation is an approved method for determining if installed CT blades support continued safe operation. We also agree with repetitive replacement of CT blades at each HSI.

We do not agree with requiring operators to perform the metallurgical examination at each HSI because new CT blades can be installed. We have determined that either performing the metallurgical examination or installing new CT blades will provide an acceptable level of safety. We changed the Compliance paragraphs to allow operators to perform the metallurgical examination or replace the entire set of CT blades with new blades at each HSI.

Request Harmonization of Compliance Times

The NTSB requested that the difference in compliance time for the BSI between the NPRM (78 FR 64421, October 29, 2013), the TCCA AD, and the P&WC SB be explained in further detail. The NTSB stated that P&WC SB No. PT6A-72-1669, Revision 9, dated June 28, 2013, includes a re-inspection interval for the repetitive BSIs of 400 hours time-in-service (TIS) while the NPRM and the TCCA AD specify 500 hours TIS.

We do not agree. The 500 hour TIS inspection interval addresses the unsafe condition by providing an acceptable level of safety. We did not change the AD.

Request to Add Repetitive Inspections

Hawkins Aero requested that the compliance paragraph of the proposed AD be revised to include repetitive BSIs and HSI metallurgical inspections for single crystal CT blades. The reason for this request is that the commenter does not believe that the repetitive inspections should be relaxed for the single crystal CT blades until more data can be gathered about their performance. Reference was made to an engine failure that occurred on an engine with single crystal CT blades as evidence that while the design is an improvement on previous blade versions they are not immune to failure.

We do not agree with mandating that the new CT blades be subjected to an inspection program designed for a different blade design and P/N. The investigation into single crystal CT blade failures has not been completed and therefore, the need for additional corrective action has not been determined. We did not change the AD.

Request to Add Additional Inspection

Hawkins Aero requested that the Compliance paragraph be changed to include platform gap inspections as well as installation instructions to ensure the proper platform gap is achieved during HSI for P&WC single crystal CT blades, P/N 3072791-01. This change was justified because single crystal CT blades, P/N 3072791-01 and P/N

3072791-02, have different blade platform gap tolerances. The P/N 3072791-01 tolerances may lead to a smaller gap between blade platforms than on the P/N 3072791-02 blades leading to a potential failure of the CT blade.

We do not agree. There have been no unsafe conditions identified concerning the platform gap dimensions that would warrant this change. We did not change the AD.

Request Revision to Economic Evaluation

Hawkins Aero requested that the economic evaluation section of the AD include foreign-registered products and corresponding revisions to the compliance section. This request was justified because accounting for foreign-registered products would increase the projected cost for the AD; additionally, the commenter recommends that we revise the compliance paragraph and include the additional costs for all additional actions.

We partially agree. We agree with revising the Costs of Compliance to include any changes that are made to the compliance paragraph. We disagree with including foreign-registered products in the Costs of Compliance because we do not consider the cost of AD actions for foreign-registered products. We changed the AD to account for Compliance paragraph changes in the Costs of Compliance.

Request Addition of Cockpit Placard

Hawkins Aero requested that the Compliance paragraph of the proposed AD be revised to include the installation of a placard in the cockpit alerting the pilot to various operational limits and re-iterating warnings from the engine and aircraft Instructions for Continued Airworthiness (ICAs). The reason given for this request is that the current guidance for pilots and maintenance personnel is not sufficient to prevent the aircraft from being operated beyond its published limits. Additionally, there are certain procedures that the pilots, operators, and maintenance personnel can perform to ensure continued safe operation.

We do not agree. Including instructions for aircraft operation does not fall within the guidelines of the AD action. We discussed this comment with the appropriate aircraft certification office.

Request Revision to Optional Terminating Action

Hawkins Aero requested that the Optional Terminating Action paragraph be revised to include guidance for operators on whether or not to install single crystal CT blades, based on operational history and the cost of parts. This request is justified based on historical differences between the CT blade deterioration experienced by certain operators and the costs of the new CT blades.

We do not agree. Providing guidance to operators based on blade deterioration vs. cost of replacement is contrary to the intent of addressing the unsafe condition. We did not change the AD.

Request Revision to Compliance

Hawkins Aero requested that the Compliance paragraph be revised to state that cracked, stretched, sulfidated, or abnormal blades should be removed from service. A justification for this request was not provided.

We do not agree. The engine ICA provide data for serviceable limits for all engine components. We did not change the AD.

Request Revision to Compliance

Hawkins Aero requested that the Compliance paragraph be revised to provide a recommendation that the repetitive BSIs be scheduled to coincide with pre-existing fuel nozzle inspections and to state the maximum allowable HSI. The reason for this request is that fuel nozzle inspection intervals match mandated BSI intervals. The HSI recommendation is 1,800 hours.

We do not agree. The HSI recommendations are stated in the ICA and providing guidance on scheduling of maintenance actions does not support an AD action intended

to address an unsafe condition in an aircraft, aircraft engine, propeller, etc. We did not change the AD.

Request Revision to Compliance

Hawkins Aero requested that the Compliance paragraph be revised to include CT disk and blade inspection intervals and requirements from the overhaul manual. The reason for this change is to provide background information for operators.

We do not agree. Restating requirements that are available to operators is redundant. We did not change the AD.

FAA's Determination

We are proposing this SNPRM because we evaluated all the relevant information and determined the unsafe condition described previously is likely to exist or develop in other products of the same type design. Certain changes described above expand the scope of the NPRM (78 FR 64421, October 29, 2013). As a result, we have determined that it is necessary to reopen the comment period to provide additional opportunity for the public to comment on this SNPRM.

Proposed Requirements of this SNPRM

This SNPRM would require accomplishing the actions specified in the NPRM, except as discussed under "Differences Between this SNPRM and the Service Information."

Differences Between this SNPRM and the Service Information

The service information requires that all operators perform metallurgical examinations of the CT blades at HSI while the proposed AD allows for either removal of the CT blades from service at HSI or performance of the metallurgical examination.

Costs of Compliance

We estimate that this proposed AD would affect about 300 engines installed on airplanes of U.S. registry. We also estimate that it would take about 4 hours per engine to

perform the required inspection and 8 hours to perform parts replacement. The average labor rate is \$85 per hour. Required parts would cost about \$59,334 per engine. Based on these figures, we estimate the cost of this proposed AD on U.S. operators to be \$18,106,200.

Authority for this Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. "Subtitle VII: Aviation Programs" describes in more detail the scope of the Agency's authority.

We are issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: "General requirements." Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

Regulatory Findings

We determined that this proposed AD would not have federalism implications under Executive Order 13132. This proposed AD would not have a substantial direct effect on the States, on the relationship between the national Government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify this proposed regulation:

- (1) Is not a "significant regulatory action" under Executive Order 12866,
- (2) Is not a "significant rule" under the DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979),

(3) Will not affect intrastate aviation in Alaska to the extent that it justifies making a regulatory distinction, and

(4) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

The Proposed Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 14 CFR part 39 as follows:

PART 39 - AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

2. The FAA amends § 39.13 by adding the following new airworthiness directive (AD):

Pratt & Whitney Canada Corp.: Docket No. FAA-2013-0766; Directorate Identifier 2013-NE-26-AD.

(a) Comments Due Date

We must receive comments by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(b) Affected ADs

None.

(c) Applicability

This AD applies to all Pratt & Whitney Canada Corp. (P&WC) PT6A-114 and PT6A-114A turboprop engines.

(d) Unsafe Condition

This AD was prompted by several incidents of compressor turbine (CT) blade failure, causing power loss and in-flight shutdown of the engine resulting in four fatalities. We are issuing this AD to prevent failure of CT blades, which could lead to damage to the engine and damage to the airplane.

(e) Compliance

Comply with this AD within the compliance times specified, unless already done.

(1) For engines that have CT blades installed other than CT blades, part numbers (P/Ns) 3072791-01 or 3072791-02, perform the following actions:

(i) Within 150 operating hours after the effective date of this AD, perform a borescope inspection (BSI) of CT blades for engines with 500 or more hours time-since-new that have not been previously inspected or time-since-last-inspection (TSLI).

(ii) Thereafter, repeat the inspection in paragraph (e)(1)(i) of this AD within 500 flight hours TSLI.

(iii) During the next hot section inspection (HSI) after the effective date of this AD, and each HSI thereafter, replace the complete set of CT blades with any of the following:

(A) New CT blades;

(B) CT blades that have passed a two-blade metallurgical examination in accordance with paragraph 3.B. of P&WC Service Bulletin (SB) No. PT6A-72-1669, Revision 9, dated June 28, 2013; or

(C) P&WC single crystal CT blades, P/Ns 3072791-01 or 3072791-02.

(2) Reserved.

(f) Mandatory Terminating Action

Within 36 months after the effective date of this AD, replace the complete set of CT blades with single crystal CT blades, P/Ns 3072791-01 or 3072791-02.

(g) Credit for Previous Action

If you performed P&WC SB No. PT6A-72-1669, Revision 9, dated June 28, 2013, or earlier versions, you have met the initial inspection requirements of this AD. However, you must still comply with the repetitive inspection requirement of paragraph (e)(1)(ii) of this AD.

(h) Alternative Methods of Compliance (AMOCs)

The Manager, Engine Certification Office, FAA, may approve AMOCs to this AD. Use the procedures found in 14 CFR 39.19 to make your request.

(i) Related Information

(1) For more information about this AD, contact Robert Morlath, Aerospace Engineer, Engine Certification Office, FAA, Engine & Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803; phone: 781-238-7154; fax: 781-238-7199; email: robert.c.morlath@faa.gov.

(2) Refer to Transport Canada Civil Aviation AD CF-2013-21R1, dated October 31, 2013, for more information. You may examine AD CF-2013-21R1 in the AD docket on the Internet at <http://www.regulations.gov/#!documentDetail;D=FAA-2013-0766-0002>.

(3) For service information identified in this AD, contact Pratt & Whitney Canada Corp., 1000 Marie-Victorin, Longueuil, Quebec, Canada, J4G 1A1; phone: 800-268-8000; fax: 450-647-2888; Internet: www.pwc.ca.

(4) You may view this service information at the FAA, Engine & Propeller Directorate, 12 New England Executive Park, Burlington, MA. For information on the availability of this material at the FAA, call 781-238-7125.

Issued in Burlington, Massachusetts, on April 18, 2014.

Colleen M. D'Alessandro,
Assistant Directorate Manager, Engine & Propeller Directorate,
Aircraft Certification Service.

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